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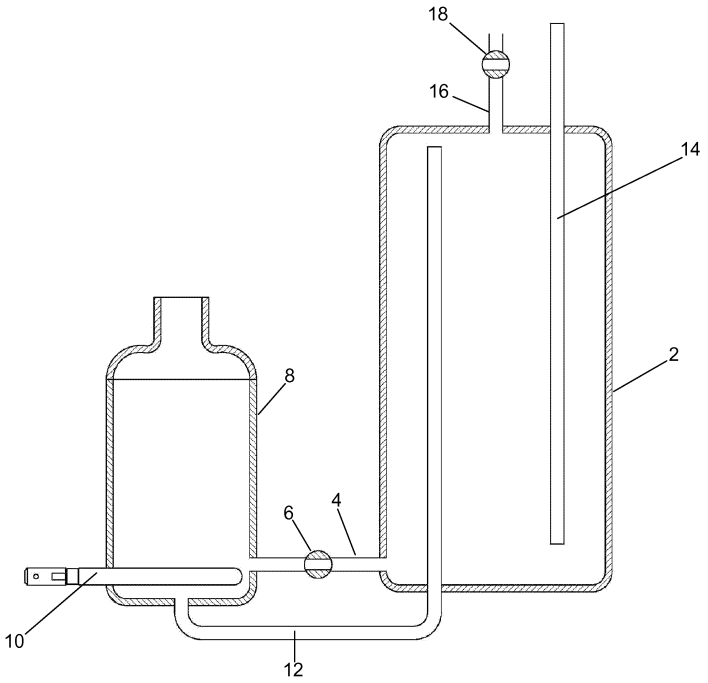
(54) Steam generator, in particular for household electrical appliances such as washing-drying machines, dishwashers, etc.

(57) A steam generator, in particular for household electrical appliances such as washing-drying machines, dishwashers, etc., characterised by comprising:
- an accumulation vessel (2) with a water inlet conduit (16) provided with valving means (18), and comprising air venting means (12),
- an open water evaporation chamber (8) provided with water heating means (10),
- a conduit (4) connecting said vessel (2) to said chamber (8) and provided with valving means (6),
- a substantially vertical conduit (14) housed in said accumulation vessel (2), said conduit emerging via its upper end from said vessel and having its lower end at a level not below the horizontal plane passing through the connection conduit (4) and not below the upper surface of the heating means (10).



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Description

[0001] The present invention relates to a steam generator, in particular for household electrical appliances such as washing-drying machines, dishwashers, etc.

[0002] In recent years there has been an ever increasing use of household electrical appliances, in particular washing machines, in which the wash cycle uses not only heated water but also steam produced by an suitable generator.

[0003] In a first known type of generator, steam is produced by the passage of current through a resistance element immersed in a container of water. When the container is empty a sensor controls the feed of further water, which is heated to be converted into steam.

[0004] This steam generator has however the drawback of a time delay in steam production relative to the moment in which power is fed to the resistance element, as a large water quantity has to be heated each time.

[0005] In a second known type of generator, water is fed onto a surface, heated to more than 100°C, by a pressure system controlled by the temperature of the heated surface.

[0006] This steam generator has other drawbacks, and in particular:

- limestone deposition on the heated surface if this is not completely immersed in water while operating,
- increased cost due to the provision of pumps, thermostats and other accessories for feeding water onto the heated surface.

[0007] An object of the invention is to eliminate these drawbacks by providing a steam generator which supplies steam with a minimum delay relative to the moment in which the resistance element is powered, and which feeds the water necessary for steam production automatically without requiring the use of special equipment.

[0008] This and further objects which will be apparent from the ensuing description are attained according to the invention by a steam generator, in particularly for household electrical appliances such as washing-drying machines and dishwashers, as described in claim 1.

[0009] A preferred embodiment of the invention is described in detail hereinafter with reference to the accompanying drawing which shows a longitudinal section through a steam generator according to the invention.

[0010] As can be seen from the figure, the steam generator according to the invention comprises substantially a cylindrical water accumulation vessel 2 connected via a conduit 4, provided with a valve 6, to an evaporation chamber 8, on the bottom of which a plate resistance element 10 is positioned.

[0011] From the evaporation chamber 8, a conduit 12 extends into the interior of the vessel 2 substantially as far as its upper surface.

[0012] The vessel 2 is also provided with a water inlet conduit 16 provided with a valve 18, and houses in its interior a tube 14 emerging from the vessel and having its lower end positioned at a higher level than the conduit 4.

[0013] The steam generator of the invention operates in the following manner.

[0014] The valve 6 is closed and the valve 18 opened to completely fill the vessel with water.

[0015] During this stage the air contained in the vessel 2 passes through the conduit 12 and into the evaporation chamber 8 which during this stage is filled only with air.

[0016] When the vessel is completely full the valve 18 is closed and the valve 6 opened.

[0017] The water contained in the vessel 2 then passes through the conduit 4 and into the evaporation chamber 8 until it reaches a level substantially corresponding to the horizontal plane passing through the lower end of the tube 14, as the pressure in the chamber 2 equals the pressure at the bottom of the tube 14 by virtue of the principle of communicating vessels and as a result of the emptying of the tube 14.

[0018] The resistance element 10 is then activated to heat the water in the chamber 2, then as this water is converted into steam a further water quantity is drawn from the vessel 2 through the conduit 4 to again reach the previous level.

[0019] When the water level in the vessel 2 falls below the lower end of the tube 14, a suitable sensor interrupts the activation of the resistance element 10, to again fill the vessel 2.

[0020] From the aforegoing it is apparent that the steam generator of the invention has the advantage of generating steam very close to the moment in which the resistance element is powered because of the limited water quantity to be heated, and of automatically drawing in water as required, without the use of particular equipment.

Claims

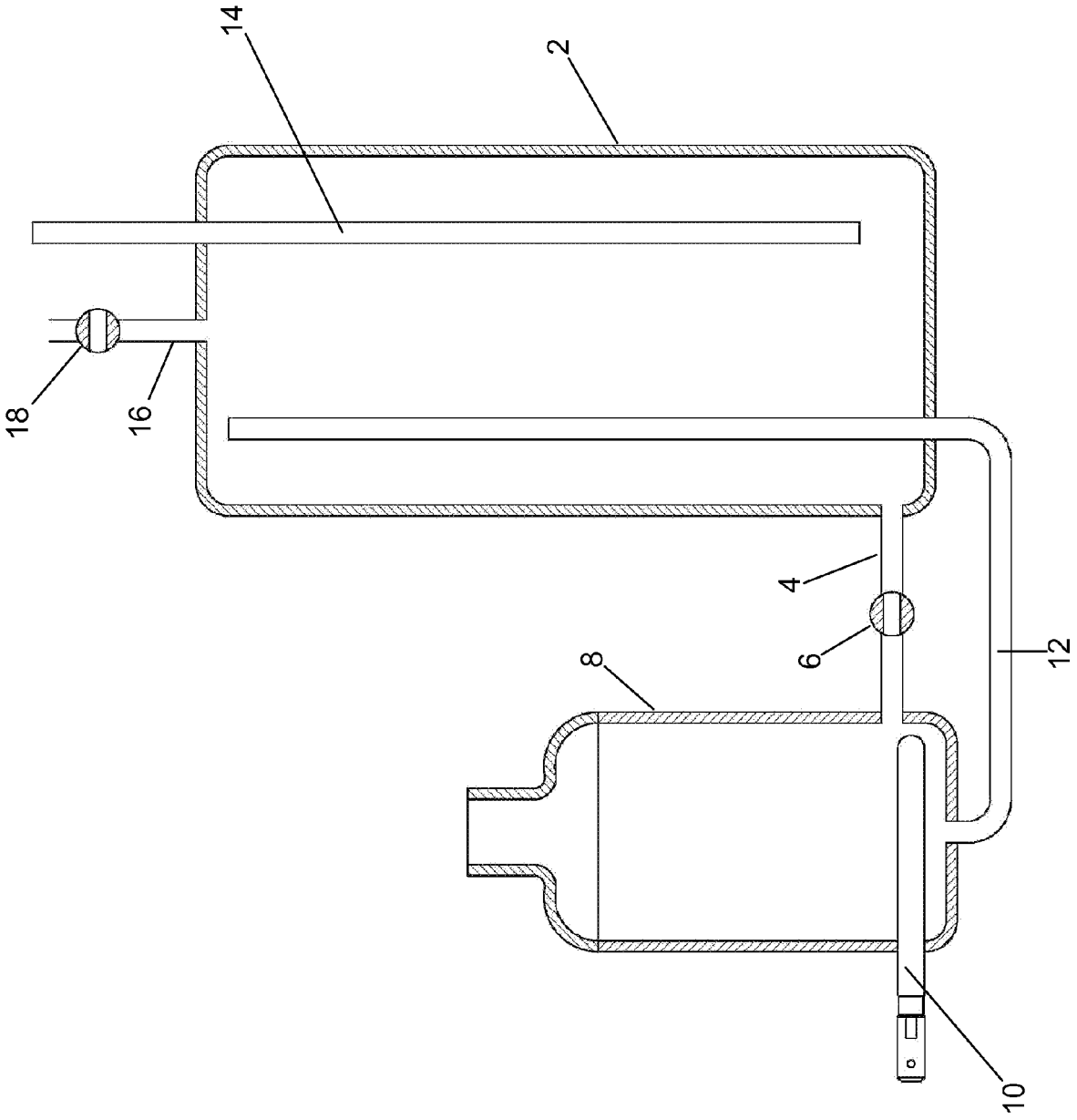
1. A steam generator, in particular for household electrical appliances such as washing-drying machines, dishwashers, etc., **characterised by** comprising:

   - an accumulation vessel (2) with a water inlet conduit (16) provided with valving means (18), and comprising air venting means (12),
   - an open water evaporation chamber (8) provided with water heating means (10),
   - a conduit (4) connecting said vessel (2) to said chamber (8) and provided with valving means (6),
   - a substantially vertical conduit (14) housed in said accumulation vessel (2), said conduit emerging via its upper end from said vessel and having its lower end at a level not below the horizontal plane passing through the connection conduit (4) and not below the upper surface of

the heating means (10).

2. A steam generator as claimed in claim 1, **characterised in that** the heating means consist of a plate resistance element.

3. A steam generator as claimed in claim 1, **characterised in that** the venting means (12) for the vessel (2) consist of a tube connecting said vessel to said evaporation chamber, said tube having that end contained in the interior of the vessel substantially in contact with the upper surface of this latter.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